

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 22

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte RAYMOND E. PHILLIPS

Appeal No. 1997-4117
Application No. 08/344,746¹

ON BRIEF

Before McCANDLISH, Senior Administrative Patent Judge, and
ABRAMS and GONZALES, Administrative Patent Judges.

GONZALES, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on an appeal from the examiner's final rejection of claims 1, 6 through 10, 15 through 17, 19, 20 and

¹ Application for patent filed November 23, 1994.

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27, which are all of the claims pending in the application.²

We REVERSE.

The subject matter on appeal is directed to a flow control device for use in heat pump systems. The subject matter before us on appeal is illustrated by reference to claims 1, 10 and 27 which, along with the other claims on appeal, have been reproduced in an appendix to the brief (Paper No. 15).

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Ford et al. 1955 (Ford)	2,715,419	Aug. 16,
Duell et al. 1976 (Duell)	3,992,898	Nov. 23,
Golestan et al. 1995 (Golestan)	5,383,489	Jan. 24,

Claims 1, 6, 8 through 10, 16, 17, 19 20 and 27

²We understand that claims 21-25 are canceled based on appellant's statement to that effect on page 2 of the brief. However, claims 21-25 have not been physically canceled in the specification and no amendment canceling claims 21-25 can be located in the file. A formal amendment canceling claims
(continued...)

²(continued...)
21-25 should be required upon return of the application to the jurisdiction of the examiner.

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stand rejected under 35 U.S.C. § 103 as being unpatentable over Duell in view of Golestan.

Claims 7 and 15 stand rejected under 35 U.S.C. § 103 as being unpatentable over Duell in view of Golestan, as applied to claims 1 and 10, and further in view of Ford.

The full text of the examiner's rejections and the responses to the arguments presented by appellant appear in the examiner's

answer (Paper No. 16, mailed April 17, 1997), while the complete statement of appellant's arguments can be found in appellant's brief (Paper No. 15, filed February 18, 1997).

OPINION

In reaching our decision in this appeal, we have given careful consideration to the appellant's specification and claims, to the applied prior art references, and to the respective positions articulated by the appellant and the examiner. As a consequence of our review, we have made the determinations which follow.

The rejection of claims 1, 6, 8 through 10, 16, 17, 19 20 and 27 under 35 U.S.C. § 103

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We reverse the examiner's rejection of claims 1, 6, 8 through 10, 16, 17, 19, 20 and 27 under 35 U.S.C. § 103.

In rejecting claims under 35 U.S.C. § 103 the examiner bears the initial burden of presenting a prima facie case of obviousness. In re Rijckaert, 9 F.3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993); In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). Only if that burden is met does the burden of coming forward with evidence or argument shift to the applicant. Id. If the examiner fails to establish a prima facie case of obviousness, the rejection is improper and

will be overturned. In re Fine, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In order to establish the prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. In re Royka, 490 F.2d 981, 985, 180 USPQ 580, 583 (CCPA 1974). Appellant argues that the combined disclosures of Duell and Golestan fail to teach or suggest a piston body with a square, hexagonal or pentagonal shape as defined in independent claims

1, 10 and 27, respectively, or a piston body having planar exterior surfaces (brief, page 11).

We agree. Claims 1, 10 and 27 are drawn to a flow control piston comprising a nose region [12] and an elongated body [14] connected to a trailing edge of the nose region and having an outer surface with a particular shape and planar exterior faces. The particular shape claimed is square in claim 1, hexagonal in claim 10, and pentagonal in claim 27.

The patent to Duell concerns an expansion device for throttling refrigerant vapors moving between a pair of heat exchangers which permit the function of the exchangers to be automatically reversed when the cycle operation is changed from a cooling mode to a heating mode (col. 1, lines 5-11].
With

reference to Figure 2, Duell describes an expansion device [15] comprising a generally cylindrical housing [30] (col. 3, lines 62-67) having a flow passage [35] which opens into an expanded annular chamber [36] (col. 4, lines 5-7]. A free-floating piston [45] is slidably mounted within the

expanded annular chamber. The piston has a centrally located metering port 46 and a plurality of fluted channels [47] formed in the outer periphery thereof. The bottom of each channel [47] is shown as having a curved or concave surface. See Figure 3 and col. 4, lines 16-63.

Golestan describes an automatic flow control valve [10] including a valve body [20] and a piston [16]. The valve body [20] has a longitudinal bore [18] defining a first flow passage [32] and a second flow passage [28] defined by a side wall [68] and an end wall [70] (see Fig. 2). The side wall [68] has at least one longitudinal flow channel or slot [24] with a first orifice [26] extending therethrough. The piston [16] is slidably disposed within the bore [18] to vary the flow area of a fluid flow through the control valve [10]. The piston [16] preferably slides within the longitudinal bore [18] to vary the flow area of the first flow passage [32] such that the fluid flow through the control valve [10] is substantially constant over a selected

range of pressure differentials across the control valve [10].

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See, col. 3, lines 20-45. Golestan teaches that while the channel 24 may have a constant width, a tapered channel design is preferred because it reduces the likelihood that a fluid borne particle will lodge itself within a channel (col. 7, line 47-50 and col. 8, lines 26-29)).

As to the shape of the flow channel or slot [24], Golestan teaches that the channels have a varying depth throughout their length and a bottom which generally follows the cylindrical contour of side wall [68], but that other embodiments may have channels of substantially constant depth or bottoms of varying contour to alter the flow characteristics of the piston (col. 5, lines 17-23). In addition, Golestan teaches that while the piston is shown in the drawings as having three substantially identical channels which are symmetrically spaced around the exterior of the side wall, other embodiments may have more or fewer channels, which may or may not be symmetrically spaced, as the desired flow rate design dictates (id. at 11-17).

Both Duell and Golestan show a piston body including a plurality of channels formed in the exterior surface thereof.

In each of the applied patents, the channels are shown as having arcuate bottoms and the channels are separated from each other by arcuate wall sections.³ Neither reference teaches nor suggests a square, hexagonal or pentagonal shaped piston body with planar exterior surfaces.

Since all the limitations of claims 1, 10 and 27 are not suggested by the prior art, it follows that a prima facie case of obviousness has not been established by the examiner. See In re Royka, supra. Dependent claims 6, 8, 9, 16, 17, 19 and 20 contain all of the limitations of their respective independent claim. Accordingly, the examiner's rejection of claims 1, 6, 8 through 10, 16, 17, 19, 20 and 27 under 35 U.S.C. § 103 will not be sustained.

The rejections of claims 7 and 15 under 35 U.S.C. § 103

Our review of Ford, which is used in combination with Duell and Golestan to reject claims 7 and 15, reveals that the reference fails to supply the deficiencies in the Duell-

³ These wall sections are illustrated as sections "A" and "B" on page 8 and 9 of the brief.

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Golestan combination discussed above. Since claims 7 and 15 are dependent on claims 1 and 10, respectively, and contain all of the

limitations of the claim from which they depend, we will not sustain the standing 35 U.S.C. § 103 rejection of these claims.

In summary, all of the examiner's rejections of claims 1, 6 through 10, 15 through 17, 19, 20 and 27 are reversed.

REVERSED

HARRISON E. McCANDLISH)	
Senior Administrative Patent Judge)	
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)	BOARD OF PATENT
NEAL E. ABRAMS)	APPEALS AND
Administrative Patent Judge)	INTERFERENCES
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JOHN F. GONZALES)	
Administrative Patent Judge)	

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